

C L A I M S

1. (Amended) A vacuum processing apparatus comprising:

a vacuum processing chamber having a stage
5 mounting a substrate to be processed; and

a carrier port provided on a peripheral wall of
the vacuum processing chamber, and carrying the
substrate onto and off the stage, for generating plasma
~~in the vacuum processing chamber and for subjecting the~~

10 substrate on the stage to a plasma processing,
characterized by comprising:

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a shutter having a heating mechanism, retreated
when the substrate is delivered onto and off the stage,
and disposed to cover a surrounding of the stage and to
15 surround a plasma generation region while closing the
carrier port when the plasma is generated in the vacuum
processing chamber, to thereby prevent the plasma from
being disordered.

2. (Amended) A vacuum processing apparatus
20 according to claim 1, characterized in that

the shutter is a cylindrical member along an inner
peripheral wall of the vacuum processing chamber, the
shutter raised by a shutter driving mechanism to close
the carrier port when the plasma is generated in the
25 vacuum processing chamber.

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3. (Amended) A vacuum processing apparatus
according to claim 2, characterized in that

the shutter driving mechanism is constituted of an
air cylinder disposed on an atmospheric area side, and
5 a driving shaft elevated by the air cylinder to elevate
the shutter.

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4. (Amended) A vacuum processing apparatus according to claim 1, characterized in that

the shutter is a plate member along an inner peripheral wall of the vacuum processing chamber, the shutter raised by a shutter driving mechanism to close the carrier port when the plasma is generated in the vacuum processing chamber.

5. (Amended) A vacuum processing apparatus
according to claim 3, characterized in that

the shutter driving mechanism is constituted of the air cylinder disposed on the atmospheric area side, and the driving shaft elevated by the air cylinder and elevating the shutter.

6. (Amended) A vacuum processing apparatus according to claim 1, characterized in that a potential of the shutter is grounded.

7. (Amended) A vacuum processing apparatus, comprising; a vacuum processing chamber having a stage mounting a substrate to be processed; and a carrier port provided on a peripheral wall of the vacuum processing chamber, and carrying the substrate onto and off the stage, for generating plasma in the vacuum processing chamber and for subjecting the substrate on the stage to a plasma processing, characterized by comprising:

a deposit shield disposed along an inner peripheral wall of the vacuum processing chamber; and

a shutter disposed to be able to be elevated along the inner peripheral wall of the vacuum processing chamber, and characterized in that

each of the deposit shield and the shutter has a grounded potential, the shutter is retreated when the substrate is delivered into and outside through the carrier port and displaced to be abutted on the deposit shield when the plasma processing is conducted, and a plasma generation region is surrounded by an even curve, thereby generating uniform plasma.

8. (Amended) A vacuum processing apparatus according to claim 7, characterized in that

the shutter is a cylindrical member along the inner peripheral wall of the vacuum processing chamber, the shutter raised by a shutter driving mechanism to close the carrier port when the plasma is generated in the vacuum processing chamber.

9. (Amended) A vacuum processing apparatus according to claim 7, characterized in that

the shutter is a plate member along the inner peripheral wall of the vacuum processing chamber, and the deposit shield is a cylindrical member having a notch portion facing the carrier port; and

when the plasma is generated in the vacuum processing chamber, the shutter is fitted into the notch portion by a shutter driving mechanism to close the carrier port.

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5 the end face is formed to have a flat surface, a groove for fitting an O ring thereinto is formed on the stage side, and a groove for fitting a spiral seal made of metal thereinto is formed on an outer periphery on the groove; and

when the processing is conducted, the deposit shield and the shutter are electrically connected to each other through the spiral seal.

15 on an end face of the shutter on the deposit
shield side, the end face is formed to have an L-shape
to be engaged with an end face of the notch portion so
as to have a convex outer periphery on the end face of
the shutter; and

20 a groove for fitting a spiral seal made of metal
thereinto is formed on the end face of the convex
portion of the shutter is formed, and when the
processing is conducted, a concave portion of the
deposit shield and the convex portion of the shutter
25 are electrically connected to each other through the
spiral seal.

12.) (Amended) A vacuum processing apparatus

according to claim 7, characterized in that
each of the deposit shield and the shutter
comprises a heating mechanism.

13. (Amended) A vacuum processing apparatus
5 according to claim 7, characterized in that

a disk-shaped evacuation plate is disposed around the stage, and the shutter and the evacuation plate are contacted with each other and electrically connected with each other when the shutter is raised.

10 14. (Deleted)

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15. (Added) A vacuum processing apparatus including
a vacuum processing chamber having a stage mounting a
substrate to be processed; and a carrier port for
carrying the substrate onto and off the stage, for
5 generating plasma in the vacuum processing chamber and
for subjecting the substrate on the stage to a plasma
processing, characterized by comprising:

a deposit shield disposed along an inner
peripheral wall of the vacuum processing chamber, and
10 having a notch portion at a position facing the carrier
port; and

a shutter having a shape fitted into the notch
portion of the deposit shield, having an inside forming
a same curve as a curve of an inner surface of the
15 deposit shield when the shutter is fitted into the
notch portion, and disposed to be able to be elevated,
and characterized in that

each of the deposit shield and the shutter has a
ground potential, the shutter is retreated to pass
20 through the notch portion to carry the substrate when
carrying the substrate inside and outside through the
carrier port, the shutter is displaced to be fitted
into the notch portion of the deposit shield when the
plasma processing is conducted, and a plasma generation
25 region is surrounded by the even curve, thereby
producing uniform plasma.

16. (Added) A vacuum processing apparatus according

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to claim 15, characterized in that

when the plasma is generated in the vacuum processing chamber, the shutter is raised by a shutter mechanism to be fitted into the notch portion to thereby close the carrier port and an inner surface of the shutter forms the same curve as the curve of the inner surface of the deposit shield.

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